

WHAT IS CLAIMED IS:

1           1.    A method of billing a call made by a user in a  
2   telecommunications network based on a reported traffic  
3   load in the network, said method comprising the steps of:  
4            sending to a presence server in the network, a  
5   registration message from at least one Media Gateway  
6   Control Function (MGCF), said registration message  
7   including a traffic load for the MGCF;  
8            determining a billing rate for the user based on the  
9   traffic load reported by the MGCF; and  
10           applying the determined billing rate to the call to  
11   calculate a charge for the call.

1           2.    The method of billing a call of claim 1 further  
2   comprising the steps of:  
3            registering in the network, a user who subscribes to  
4   a network-load based billing service; and  
5            sending from the presence server to the user, an  
6   indication of the traffic load reported by the MGCF.

1           3.    The method of billing a call of claim 1 wherein  
2   the network utilizes Session Initiation Protocol (SIP)  
3   control signaling for call setup and call control, and  
4   the step of sending a registration message from at least  
5   one MGCF to a presence server in the network, includes:

6            modifying a SIP REGISTER message to include traffic  
7            load information for the MGCF; and  
8            sending the SIP REGISTER message from the MGCF to  
9            the presence server.

1            4.    The method of billing a call of claim 3 wherein  
2            the step of sending a registration message from at least  
3            one MGCF to a presence server in the network also  
4            includes sending an update SIP REGISTER message from the  
5            MGCF to the presence server whenever the presence state  
6            of the MGCF changes or the traffic load changes by a  
7            threshold amount.

1            5.    The method of billing a call of claim 4 further  
2            comprising the steps of:  
3                   registering in the network, a user who subscribes to  
4                   a network-load based billing service; and  
5                   notifying the user of changes to the network traffic  
6                   load whenever the MGCF sends an update SIP REGISTER  
7                   message to the presence server.

1            6.    The method of billing a call of claim 5 wherein  
2            the step of notifying the user of changes to the network  
3            traffic load includes notifying the user of changes to  
4            the network traffic load prior to the user placing the

5 call, thereby enabling the user to assess the  
6 corresponding billing rate prior to placing the call.

1 7. The method of billing a call of claim 1 wherein  
2 the step of applying the determined billing rate to the  
3 call to calculate a charge for the call includes  
4 calculating a charge for the call based on the determined  
5 billing rate and parameters of the call relating to  
6 network resource usage.

1 8. The method of billing a call of claim 7 wherein  
2 the billing rate is expressed as a cost per unit time,  
3 and the step of calculating a charge for the call based  
4 on the determined billing rate and parameters of the call  
5 relating to network resource usage includes:

6 determining a duration of the call; and  
7 multiplying the duration of the call by the  
8 determined billing rate.

1 9. The method of billing a call of claim 7 wherein  
2 the billing rate is expressed as a cost per unit volume  
3 of data transferred, and the step of calculating a charge  
4 for the call based on the determined billing rate and  
5 parameters of the call relating to network resource usage  
6 includes:

7           determining a volume of data transferred during the  
8   call; and  
9           multiplying the volume of data transferred during  
10   the call by the determined billing rate.

1           10. A method of billing a call made by a user in a  
2   telecommunications network based on a reported traffic  
3   load in the network, said method comprising the steps of:  
4           sending to a presence server in the network, a  
5   registration message from at least one Media Gateway  
6   Control Function (MGCF), said registration message  
7   including a traffic load for the MGCF;  
8           sending an update of the traffic load from the MGCF  
9   to the presence server whenever the traffic load of the  
10   MGCF changes by a threshold amount;  
11           registering in the network, a user who subscribes to  
12   a network-load based billing service;  
13           sending from the presence server to the user, an  
14   indication of the current traffic load reported by the  
15   MGCF;  
16           sending the reported traffic load from the presence  
17   server to a billing node when the user places the call;  
18           determining by the billing node, a billing rate for  
19   the user based on the traffic load reported by the  
20   presence server;

21           determining by a Call State Control Function (CSCF),  
22       parameters of the call relating to network resource  
23       usage;  
24           sending the parameters from the CSCF to the billing  
25       node; and  
26           calculating by the billing node, a charge for the  
27       call based on the determined billing rate and the  
28       parameters relating to network resource usage.

1           11. The method of billing a call of claim 10  
2       wherein the step of determining parameters of the call  
3       relating to network resource usage includes determining  
4       a duration of the call.

1           12. The method of billing a call of claim 10  
2       wherein the step of determining parameters of the call  
3       relating to network resource usage includes determining  
4       a volume of data transferred during the call.

1           13. A system in a telecommunications network for  
2       billing a call placed by a user based on a reported  
3       traffic load in the network, said system comprising:  
4           at least one Media Gateway Control Function (MGCF)  
5       that sends registration information to the network, said  
6       registration information including a reported traffic  
7       load for the MGCF;

8           a presence and instant messaging (PIM) server that  
9           receives the registration information from the MGCF and  
10          sends the reported traffic load to a billing node;

11          a Call State Control Function (CSCF) that determines  
12          parameters of the call relating to network resource usage  
13          and sends the parameters to the billing node; and

14          a billing node that determines a billing rate based  
15          on the reported traffic load and calculates a charge for  
16          the call based on the determined billing rate and the  
17          parameters relating to network resource usage.

1           14. The system for billing a call of claim 13  
2           wherein the CSCF includes means for determining a  
3           duration of the call, and the billing node determines a  
4           billing rate expressed as a cost per unit time and  
5           calculates a charge for the call by multiplying the  
6           duration of the call by the determined billing rate.

1           15. The system for billing a call of claim 13  
2           wherein the CSCF includes means for determining a volume  
3           of data transferred during the call, and the billing node  
4           determines a billing rate expressed as a cost per unit  
5           volume of data and calculates a charge for the call by  
6           multiplying the volume of data transferred during the  
7           call by the determined billing rate.

1           16. A system in a telecommunications network for  
2     billing a call placed by a user based on a reported  
3     traffic load in the network, said system comprising:

4           means for controlling data transferred through the  
5     network, said data controlling means including means for  
6     sending registration information to the network, said  
7     registration information including a reported traffic  
8     load for the network;

9           means for receiving the registration information  
10    from the data controlling means and sending the reported  
11    traffic load to a billing means;

12          means for setting up and controlling the call, said  
13    call setup and control means including means for  
14    determining parameters of the call relating to network  
15    resource usage and sending the parameters to the billing  
16    means; and

17          billing means for determining a billing rate based  
18    on the reported traffic load and calculating a charge for  
19    the call based on the determined billing rate and the  
20    parameters relating to network resource usage.